Office of Oversight
Review of the
Occupational Medicine Program
at the
Oak Ridge National Laboratory

September 1998

Office of Environment, Safety and Health

TABLE OF CONTENTS

ACRONYMS

AAAHC	Accreditation Association for Ambulatory Health Care
ACLS	Advanced Cardiac Life Support
DOE	Department of Energy
ES&H	Environment, Safety and Health
IH	Industrial Hygiene
ISM	Integrated Safety Management
LMERC	Lockheed Martin Energy Research Corporation
OR	Oak Ridge Operations Office
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration

OFFICE OF OVERSIGHT REVIEW OF THE OCCUPATIONAL MEDICINE PROGRAM AT THE OAK RIDGE NATIONAL LABORATORY

1.0 INTRODUCTION

This report provides site-specific results on an Office of Oversight review of the occupational medicine program at the Oak Ridge National Laboratory (ORNL). The review at ORNL is one portion of a recently initiated independent oversight review of occupational medicine programs across the complex. The goal of this Oversight review is to identify site-specific and Department of Energy-wide (DOE) issues that require management attention and to provide a foundation for improving occupational medicine program policy and site performance.

OVERVIEW OF THE OAK RIDGE NATIONAL LABORATORY (ORNL) AND ITS OCCUPATIONAL MEDICINE PROGRAM

Activities: ORNL is part of an integrated science, technology, and education complex that is operated in partnership with Federal and private sector funding and support. In support of DOE missions, ORNL conducts basic and applied research and development to strengthen the nation's leadership in key areas of science, increase the availability of clean abundant energy, restore and protect the environment, and contribute to national security.

Budget: The total FY 1998 budget for ORNL is $556 million. About 80 percent of ORNL activities is funded by DOE sources.

Site: ORNL is located in the eastern portion of Tennessee about 25 miles from Knoxville. The site encompasses approximately 58 square miles.

Staff and Visitors: ORNL has approximately 5,000 employees, which includes about 1,500 scientists and engineers. Each year, about 4,000 guests, 30,000 visitors, and 10,000 students visit ORNL to take advantage of the site infrastructure, technology, and educational opportunities.

Organizations: The DOE Headquarters Office of Energy Research is the Cognizant Secretarial Office for ORNL. The Oak Ridge Operations Office (OR) provides direction to the site contractor. Lockheed Martin Energy Research Corporation (LMERC) manages ORNL. The occupational medicine program is implemented primarily by the LMERC Health Division, which reports to the Associate Laboratory Director for Operations, Environment, Safety and Health. The ORNL Departments of Health Physics and Industrial Hygiene and Safety also have significant roles in the occupational medicine program.

Occupational Medicine Program: The ORNL occupational medical program has 27 employees, including three physicians, one physician assistant, four nurses, one psychologist, four medical technicians, and two radiological technicians. The mission of the ORNL Health Division is to assist in maintaining the physical and emotional health of all employees, thereby reducing absenteeism, enhancing productivity, and prolonging employees' productive years. The goal of the ORNL Health Division is to establish programs that will provide quality occupational health services, recommend optimum environmental health standards, and promote effective operations.

Background

The mission of the Office of Oversight includes evaluation and analysis of DOE policies and programs in the areas of environment, safety, health, safeguards, and security. As an important element of a DOE worker safety and health program, occupational medicine programs are included within the scope of selected Office of Oversight assessment activities.

Recent Office of Oversight assessments have identified weaknesses in some aspects of occupational medicine programs at several sites. For example, an independent oversight evaluation of emergency management across the DOE complex highlighted weaknesses in the interface between occupational medicine programs and emergency management programs at several sites. Because of such weaknesses, some sites may not be adequately prepared to provide timely and effective medical treatment to workers that have been injured or exposed to hazardous materials (e.g., information on the hazardous materials may not be readily available at the site or local medical treatment facilities). Similarly, reviews of occupational medicine programs at individual sites during Office of Oversight safety management evaluations indicated that occupational medicine programs at some sites are not accomplishing all of their objectives.

Collectively, the recent assessment results indicated a need for a more comprehensive review of occupational medicine programs. Correspondingly, the Office of Oversight decided to perform a review of occupational medicine programs across the complex. The first phase of the review will encompass three sites and will be completed in FY 1998. An interim report will be prepared to identify trends and issues that warrant additional review. In the second phase, additional sites will be reviewed in FY 1999 and a final report will be prepared.

Approach and Methodology

The Office of Oversight decided to use a unique approach when performing the reviews of the individual sites. Specifically, the Office of Oversight's expertise in assessing occupational medicine programs when evaluating occupational medicine programs is being enhanced by using licensed medical physicians who specialize in occupational medicine. To obtain such expertise, the Office of Oversight has teamed with the Accreditation Association for Ambulatory Health Care (AAAHC) to perform the review.

The AAAHC is a professional organization that performs surveys of medical clinics and accredits programs that have demonstrated compliance with an established set of nationally recognized standards. As part of the teaming agreement, the AAAHC supplied certified surveyors to supplement the Oversight team in the evaluation of the ORNL occupational medical program.

The AAAHC participation on this review served two purposes:

- The AAAHC performed a survey according to their established procedures and standards. As part of this effort, the ORNL staff completed a self-assessment (called a pre-review survey in the AAAHC process) against the AAAHC standards. The site can use the AAAHC evaluation to determine their status against national standards. It also provides ORNL with AAAHC suggestions for improvement and an initial assessment of the efforts that ORNL would need to perform should ORNL decide to seek accreditation.

- The positive attributes, weaknesses, and insights from the AAAHC survey were factored into the Oversight evaluation of occupational medicine program performance. The insights from

professional AAAHC surveyors were considered, in combination with other information gathered by the Office of Oversight team during interviews and tours. In this manner, the AAAHC survey was an important component of the Office of Oversight evaluation of the effectiveness of the ORNL medical program with respect to current DOE policy and requirements.

This unique approach to independent oversight provided an effective and efficient method to obtain the independent perspectives of qualified and experienced medical professionals.

Standards for the Site-Specific Review

This independent oversight review at ORNL focuses on the effectiveness of Oak Ridge Operations Office and contractor line management in establishing and implementing an effective occupational medical program, as defined by applicable DOE orders and policies. The DOE policies that specifically apply to the occupational medicine program are DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees, and DOE Policy 450.4, Safety Management System. DOE Order 440.1A delineates the basic program elements necessary for an occupational medical program. It requires that contractors use a graded approach to establish medical program requirements, and utilizes supplemental orders and program guidance documents to establish specific medical program expectations and requirements. DOE Policy 450.4 defines a comprehensive and coordinated program of Environment, Safety and Health (ES&H) expectations and activities that is commonly referred to as integrated safety management (ISM). All site ES&H programs, including occupational medical programs, are to be implemented within the ISM framework.

In performing reviews of occupational medicine programs across the country, the AAAHC uses a set of nationally recognized standards. The AAAHC standards are relevant to all DOE sites and identify core program elements that are essential for high-quality patient care. In addition to the core standards, AAAHC reviews the site occupational health services and identifies applicable adjunct standards. DOE Headquarters Office of Occupational Medicine supports the accreditation process and is in the process of modifying DOE Order 440.1A to be more consistent with accreditation provisions and guidelines. Although not currently a specific requirement of DOE policy or the ORNL contract, the AAAHC standards generally reflect the philosophy outlined in DOE safety management policies and are relevant to all DOE sites. The AAAHC standards emphasize the quality improvement process, which is a central theme of integrated safety management.

Focus of the Review

Consistent with DOE policy and requirements, a comprehensive occupational medicine program performs several interrelated functions:

- **Clinic services.** Onsite medical staff perform various routine medical procedures (e.g., physical examinations, laboratory testing) to identify and treat occupational illness or injuries, ensure worker fitness for duty, facilitate recovery and safe return to work, and refer patients for further treatment as indicated. In this regard, the occupational medicine program serves as an onsite clinic and provides timely and convenient access to medical services. In some cases, access to subsidized health services is part of employee benefits packages.

- **Medical surveillance.** DOE sites often involve hazardous materials and the work at DOE sites can involve potentially hazardous conditions. Correspondingly, DOE sites need to

identify job categories that could involve specific chemical, biological, or physical hazards and establish a process for routine health examinations and monitoring of employees in such categories. Such a process needs to be coordinated so that the information collected is useful and available for epidemiological studies. The occupational medicine program needs to ensure that DOE has the necessary information to identify trends, protect employees, respond to requests for information from individuals and stakeholders, and ensure that accurate information is available for managers to ensure the adequacy of the health protection program.

- **Support for site efforts to monitor and control exposure to radiation and hazardous materials.** DOE sites must monitor and control radiation exposure in accordance with a radiation protection plan. Such efforts often require various methods to measure radiation exposure (e.g., whole body counts) that may be performed on a routine basis or to determine the extent of exposure after an incident. Similarly, DOE sites must comply with various Federal and state regulations related to worker safety and hazardous materials (e.g., Occupational Safety and Health Administration [OSHA] requirements for protection against exposure to hazardous substances). The occupational medicine program must coordinate with other site organizations to ensure that site hazards are identified and that appropriate measures to mitigate hazards are in place.

- **Support for emergency management preparation and response.** DOE sites must be prepared to handle emergencies and unplanned releases of radioactive or hazardous materials. Occupational medicine programs need to be able to provide support during an emergency situation (e.g., providing treatment to injured workers, coordinating support with local hospitals, ensuring that information about hazardous materials is readily available to medical personnel that treat exposure victims, and providing recommendations for protecting the public).

In performing these activities, DOE sites must maintain information about hazardous materials. Many of the materials used at DOE facilities and laboratories, such as beryllium, pose significant health risks and other materials are not commonly encountered in industry and thus may be unfamiliar to health care providers in the event of an accidental exposure. The occupational medicine program personnel must also be involved in keeping track of the types of hazardous materials at the site, their health effects, and recommended treatments.

The Office of Oversight review team focused on the sites' ability to accomplish each of the above functions. Section 2.0 of this report identifies positive attributes, issues requiring attention, and conclusions regarding the overall effectiveness of the ORNL occupational medicine program in meeting its objectives. Section 3.0 presents opportunities for improving the current program.

2.0 RESULTS

Positive Attributes

1. **The review determined that the ORNL occupational medical program achieved substantial compliance with a majority of the AAAHC standards.** The AAAHC determined that the ORNL occupational medical program was substantially compliant (the highest rating assigned in an AAAHC survey) in five of eight of the core standards and six of the seven applicable adjunct standards. In areas related to clinical services, such as urgent care services, diagnostic imaging, clinical records management system, facilities, and environment and laboratory services, ORNL was rated substantially compliant. Appendix A provides additional details on the AAAHC comments.

2. **Improvements have been made in recent years in several areas.** The AAAHC evaluator complimented ORNL for the notable improvements in the medical department over the past three years, including the policies regarding review of laboratory results, notification of employees/patients, the redesign of the computerized medical data base, and the state-of-the-art facilities for storage of medical records.

Weaknesses and Issues Requiring Attention

1. **Weaknesses were evident in occupational health practices and records.** The audit of employee records identified a lack of specific documentation in the individual medical records in the areas of industrial hygiene exposure data, occupational exposure history, work demands, personal protective equipment, and preventative counsel related to occupational health. This type of information should be a primary focus of any occupational health-related record. Failure to document relevant information diminishes the effectiveness and quality of the occupational medical program for the individual, ORNL, and the DOE.

2. **The ORNL medical quality management program is not well developed.** ORNL does not have a formal quality management peer review process or clinical review process to direct or monitor important elements of an occupational medical program. For example, deficiencies in charting are not routinely discussed, monitored, and documented to enhance the medical surveillance process. Medical providers do not have a clear understanding of their core roles and responsibilities. The existing processes do not adequately provide for annual reviews of clinical performance and an ongoing peer review process to assure the quality of the medical services provided.

3. **The occupational medicine program is not adequately defined by site requirements.** The ORNL process for the identification of standards and requirements (Work Smart standards) has eliminated the occupational medical policy expectations contained in DOE Order 440.1A as a contractual requirement. The current set of Work Smart standards identifies selected OSHA regulatory requirements, such as the Lead Program and Respirator Program. Compliance with these individual OSHA regulations is important, however, the identified individual regulations are not sufficient to define a comprehensive occupational medical program. The LMERC policy, programs, and procedures now in place for occupational medicine fail to fully meet the DOE safety management system policy and expectations and do not ensure accountability for performance. In addition, with the current focus on OSHA compliance, future changes in DOE policy (i.e., changes to DOE 440.1A)

would not necessarily be incorporated at ORNL because the occupational medicine provisions of the Order are not included in the ORNL contract.

4. **Roles and responsibilities for important occupational medicine program functions have not been adequately defined and communicated.** The program description and procedures in ORNL Safety and Health Program (ORNL-SH-P01) reflect a listing of the roles and responsibilities necessary to maintain an occupational health program. However, medical surveillance (i.e., health examinations and health monitoring of employees who work in jobs involving specific physical, chemical, and biological hazards) is not specifically mentioned for personnel that have key positions, including line program department safety officers and the supporting health division staff. The ORNL occupational health program procedure (MD-153) does not reflect the medical program interface with line management in the areas of hazard recognition, exposure assessment, and medical surveillance. In addition, procedures do not address medical program responsibilities to support management with community health or former worker issues, including epidemiological research and formal communication of health evaluation results to both DOE and contractor management. The ORNL program documentation does not clearly specify a formal method of ensuring that the health program personnel are included in reviews of proposed research activities or scheduled work planning activities that have potential health effects. Although input from the medical staff has occasionally been useful on past projects (e.g., a medical program review of a recent plan to conduct biological weapons research at ORNL resulted in facility design changes and additional training for the Medical Director), involvement of medical personnel in program planning has been ad hoc and is not specified in procedures.

5. **Effective coordination and integration are not being achieved.** The ability to fully integrate occupational medicine into safety management has been constrained by the allocation of resources and the reduction in funding (correspondingly to a proportional allocation for overhead services and a reduction in base funding). ORNL management recognizes that the demands on the Medical Director are such that his ability to administer the full scope of the program is limited. As a result, some functions, such as the requirement to maintain all sections of the emergency plan that interface with occupational medicine, are not being accomplished. The Medical Director has stated that the emergency medical technician program is functioning properly and has the necessary equipment for emergency response. However, he also indicated that other areas of emergency management interface, such as coordination and communication with offsite facilities and direct participation with emergency planning activities, are not being completed. ORNL management does not consider the hiring of additional medical staff to supplement the clinical duties of the Director as a priority in the current budget allocation process.

6. **Occupational medicine programs are not addressed under the auspices of the ORNL ISM efforts.** OR and LMERC have initiated efforts to implement ISM but the initial efforts to develop ORNL Division-level implementation plans do not contain any reference to occupational health program interfaces or describe how line management will identify and track workers potentially exposed to hazards. Medical surveillance, the cornerstone of DOE occupational medical program requirements, does not have the needed recognition within the ISM effort. In addition, important elements of an ISM program, such as accountability for performance and feedback mechanisms, are not clearly defined as they relate to the ORNL occupational medicine program. For example, the proposed OR and LMERC appraisal plan focuses solely on regulatory requirements and does not address programmatic policy or system interfaces for occupational medicine. Occupational medical program requirements

related to exposure assessments, medical surveillance, and integrated work planning processes have not been the subject of appraisals by OR or LMERC.

Conclusions

The ORNL Health Division has established an onsite occupational medical program that has in place the majority of the necessary organizational characteristics to provide medical care to employees as measured against nationally recognized standards. Areas such as internal administration, diagnostic services, existing clinical procedures and protocols, quality of care, and facilities and equipment, were found to be effective and in compliance with AAAHC standards.

While the foundation of a comprehensive medical program has been established, key elements of occupational health services, including employee medical surveillance documentation and quality management practices, do not currently meet expectations. The medical surveillance program does not systemically collect sufficient information relevant to employee exposures, work demands, and personal protective equipment to determine whether workers have been exposed to hazards. Therefore, occupational health services cannot identify trends related to job hazards and is not providing management with the information needed to determine and defend the adequacy of worker protection programs. In addition, quality management systems have not included methods to assess, identify, and correct programmatic deficiencies at the clinical level or the Division level.

In the context of DOE policy expectations and requirements, the AAAHC survey results are symptomatic of an occupational medical program that has not been fully integrated within a comprehensive safety management program. OR and LMERC management have not fully recognized or implemented the requirements currently established for a DOE occupational medical program and have not yet incorporated occupational medicine programs into integrated safety management.

3.0 OPPORTUNITIES FOR IMPROVEMENT

The review identified several opportunities for improvement. The potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by DOE and contractor management, and modified as appropriate to meet DOE and site-specific objectives and expectations.

1. The Health Division should perform a rigorous self-assessment of its occupational health examination protocols and make improvements as needed. As part of the self-assessment effort, ORNL should:
    - Determine how occupational history and exposure information could be effectively incorporated into the clinical medical record
    - Review and clarify roles and responsibilities of health examiners to focus on the importance of a comprehensive occupational history and examination
    - Establish a formal peer review and clinical evaluation process for ORNL medical providers.

2. ORNL safety and health program descriptions and procedures should clearly describe the process for communicating and recording information that is needed for a comprehensive occupational health and medical surveillance program.

3. Efforts to achieve better integration of occupational medical program services with line programs, especially in the area of medical surveillance, should be included in safety and health performance objectives and assessment programs. Assessments should be conducted to evaluate the programmatic performance of occupational medicine. Such assessments should determine whether hazards from proposed research or planned work activities that have the potential for health effects are formally recognized, communicated, and recorded so that the medical staff can effectively evaluate and monitor employee health.

4. OR and LMERC management should provide clear programmatic direction to implement an occupational health program that meets the expectation of DOE policy and guidance. OR and LMERC management should review the standards and requirements specific to the ORNL occupational medical program and include applicable requirements as delineated in the contractor occupational medical program section of DOE 440.1A.

5. OR and LMERC safety and health management should use the ISM program planning and implementation process to emphasize the roles of the Health Division and line management in a comprehensive occupational health program. The integration and communication of hazard recognition, exposure assessment, and medical surveillance for workers potentially exposed to hazardous substances should be addressed in all Division program implementation plans.

In addition to the items above, ORNL should give due consideration to the AAAHC evaluation and recommendations and make improvements accordingly. Consideration should also be given to seeking accreditation.

APPENDIX A

SUMMARY OF AAAHC SURVEY COMMENTS
ORNL OCCUPATIONAL MEDICAL PROGRAM

Introduction

As part of its normal survey process, AAAHC provides detailed evaluation results to the site. The AAAHC results include a rating (i.e., substantially compliant, partially compliant, or non-compliant) for each of the applicable standards. The standards published in the "Accreditation Association Handbook for Ambulatory Health Care" describe organizational characteristics that AAAHC believes to be essential to high-quality patient care. For those standards that are partially compliant or non-compliant, the surveyor provides written comments about the observed weaknesses.

The AAAHC report for ORNL consisted of approximately 125 pages of completed evaluation forms, which include supporting comments. The AAAHC also identified a set of potential improvements that would be needed to obtain certification. The Office of Oversight developed the following summary of the AAAHC comments.

AAAHC Assessment

The ORNL occupational medical program was in substantial compliance in 11 of the 15 standards determined to be applicable to the AAAHC accreditation process. The areas of substantial compliance included:

- Administration
- Quality of care provided
- Clinical records
- Professional improvement
- Facilities and environment
- Emergency services
- Immediate/urgent care
- Pharmaceutical services
- Pathology and laboratory services
- Diagnostic imaging services
- Other professional and technical services.

The areas of partial compliance included:

- Rights of patients
- Governance
- Quality management and improvement (Note: Peer review, which is a subsection of this standard, was judged to be non-compliant)
- Occupational medicine.

While many elements of the of the ORNL contractor occupational medical program are in place, several areas of weakness exist in the areas of quality management, occupational health, and emergency services. The AAAHC surveyor estimated that accreditation could be achieved in 12-18 months if systems were in place to correct the survey findings.

The following paragraphs summarize the AAAHC comments related to partial or non-compliant survey standards.

Quality Management

Quality management programs at ORNL should provide DOE and contractor management with timely and informative feedback on safety and health performance, however, the quality management programs have not included performance objectives that address requirements. The occupational medical program at ORNL did not have a formal peer review process or clinical evaluation process for medical providers to evaluate performance. The process is intended to identify underlying deficiencies and establish a mechanism to correct those deficiencies. There is little evidence of formal communication between the Medical Director and his immediate supervisor, or among the Medical Director and the Health Division staff. Other than the budget presentation, there was no documentation that goals or objectives for the medical program were discussed.

Occupational Health

The emphasis on collecting, communicating, and documenting medical surveillance data relevant to employees' potential hazards and exposures from both the work site and the Health Division is not adequately addressed. One significant notation from the AAAHC survey indicated that ORNL medical records did not contain specific documentation on industrial hygiene (IH) exposure data, elaboration of occupational exposure history, or specific discussions of work demands, personal protective equipment, restrictions, and preventative counsel in occupational health. It was not clear whether this information is treated informally or is unavailable to the health examiner. It was also not clear that the Health Division had an effective working relationship with industrial hygiene and safety.

Medical personnel assumed that they would be informed if an employee had an excessive exposure; however, routine IH exposure data was not available and there were no routine meetings with IH and safety.

Emergency Services

Physicians may be called on to provide Advanced Cardiac Life Support (ACLS) during an emergency. However, some physicians that may be called do not have ACLS certification.

Other AAAHC Comments

Comprehensive "patients' rights" information is not readily available within the clinic operations. Some medical providers may not be fully aware of the patient's rights under the state workers compensation system.

There is no grievance procedure or convenient means of making suggestions or registering complaints specific to the occupational medical program or the medical providers. Policies and protocols need to address how satisfaction surveys or complaints will be resolved.

Laboratory results should be initialed to identify who reviewed results and laboratory reports should be signed. Alternatively, laboratory reports could be incorporated into a history form that is part of a packet that is signed.

Several medical department procedures had not been reviewed in past five years as required by ORNL internal policy.